Energy-efficient Housing in Australia: Incentives and Barriers to Large-scale Adoption

Abstract

In times of climate uncertainty and overheating, Passivhaus is globally tagged as a housing solution for significant emissions reduction (up to 90 per cent compared with conventional housing) and constant cooling. Existing studies have focused on the supply side of Passivhaus with a limited understanding of the demand-based factors influencing Passivhaus adoption in Australia. Adoption of Passivhaus principles to date has been very low. Transitioning to net zero carbon emissions by 2050 will depend on the large-scale adoption of high energy-efficiency housing, as exemplified by the Passivhaus concept. The purpose of the study is to develop a conceptual model to enhance understanding of the demand-side factors influencing Passivhaus adoption. Drawing from innovation adoption theories, the study aims to develop a conceptual model that identifies consumer behaviour to Passivhaus, which enhances understanding of incentives and barriers to large-scale Passivhaus adoption. The study model will be tested via 38 in-depth interviews followed by 535 questionnaires with existing and potential Passivhaus consumers in Australia. The conceptual model may reveal that identified constructs of perceived usefulness, perceived ease of use, relationships between climate change and energy efficiency, and socio-demographic factors of income and occupation have positive impacts on consumer intentions towards Passivhaus adoption. The study presents a conceptual model of energy-efficiency innovation adoption by integrating and refining four established theories. The model offers unique insights into the demand for high energy□efficiency housing in Australia via new research into consumer behaviour, incentives and barriers to large□scale adoption of Passivhaus principles.